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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/773,524	Applicant(s) YONEYAMA ET AL.	
	Examiner Tsung-Yin Tsai	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 25 October 2007.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 2-4,7,9-12 and 18-26 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 2-4, 7, 9-12 and 18-26 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 5/27/2007 is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAIL ACTION

Acknowledge of amendment received on 10/25/2007 and made of record.

Acknowledge of amendment to specification on page1 lines 17-25.

Acknowledge of amendments to abstract.

Acknowledge of amendments to claims 2-3, 7 and 9-11.

Acknowledge of canceling claims 1, 5-6, 8 and 13-17.

Acknowledge of new claims 18-26.

Response to Arguments

Applicant's argument – Page 17, It is respectfully submitted that the prior art references cited by the Examiner do not disclose, teach or suggest the above described features and advantageous effects of the defect inspection apparatus and method of the present invention as recited in the amended claims.

Examiner's response – West et al and Xu et al combine teaches defection inspection system that that disclose by the limitations of the claims. Please read the 35 USC 103 rejection below.

Applicant's argument – Page 18, West et al does not teach setting a focus control parameter used for automatic focus control.

Examiner's response – West et al and Xu et al both teaches some sort of focus control parameter, however it is Xu et al that teaches a more focusing parameter

by the use of steeper motor and further more on diameter and illumination as the focusing parameter as well.

Applicant's argument – Page 19, However, this portion of Xu et al does not disclose setting a focusing parameter for an automatic focusing operation. Moreover, this portion of Xu et al does not mention setting a focusing parameter for automatic focusing when inspecting a reference part to obtain information about the focusing which can be used for setting a focusing parameter for automatic focusing when inspecting other parts.

Accordingly, it is respectfully submitted that West et al and Xu et al do not disclose, teach or suggest a defect detection method and apparatus including all of the features of independent claims 9 and 18, respectively.

Examiner's response – Xu et al teaches where the focusing parameter is base on the stepper motor, diameter and illumination (column 3 lines 1-45). Xu et al teaches that these inspection systems will be automated such that it will reduce labor cost and provides improved consistency and accuracy over human operators (column 2 lines 1-15). Columns 3 lines 1-445 discloses how the information are obtain from calibration samples in order such that the automation will have parameters for compare with during inspection for defects.

Combining the teachings of West et al and Xu et al teaches all these limitations.

Claim Rejections – 35 USC 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-4, 7, 9-12 and 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over West et al (US Patent Number 4,496,971) in view of Xu et al (US Patent Number 5,761,336).

(1) Regarding claim 18:

West et al teaches regarding the following subject matter:

a stage (figure 3 par 30 discloses the stage where the object of interest is place of inspection and imaging) on which an observation object (figure 3 part 31 is seen the objection of observation) is placed;

an objective lens for imaging (figure 1 disclose the imaging of the part of the area of the object that is being imaging) the observation object (figure 3 part 31 is seen the objection of observation);

an observation part changing unit (figure 3 discloses where the stage is movable for changing of the position 32 for the imaging) for changing an observation position (figure 3 part 32 discloses the position axis of imaging of the object of interest for imaging) of the observation object (figure 3 part 31 is seen the objection of observation) via the

objective lens by moving at least one of the stage (figure 3 part 30 and 37 discloses the movable of the stage in changing the axis 32 for imaging of the object of interest) and the objective lens in a direction perpendicular to an optical axis of the objective lens;

a focusing unit (column 4 lines 20-60 discloses a camera 33 comprising a optical focusing system which enables adjacent points of moving for focusing) for changing a relative distance (column 4 lines 20-60 discloses where the focusing system can change relative distance in the increments; for example less than 50 um) between the stage (figure 3 par 30 discloses the stage where the object of interest is place of inspection and imaging) and the objective lens in a direction of the optical axis of the objective lens;

a focusing control unit () for performing automatic focusing by driving said focusing unit to focus on the observation object;

a parameter setting unit for setting a focusing control parameter used for controlling the automatic focusing;

a pattern image obtaining unit (figure 3 part 33 disclose the unit that will obtain the image of the object of detection) for obtaining a pattern image (figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of an observation part (figure 1 discloses the one part of the object of observation analysis) by driving the observation part changing unit (figure 3 discloses where the stage is movable for changing of the

position 32 for the imaging) to change the observation position (column 4 lines 30-45 discloses the adjusting of spacing/position for imaging of the area of the object of interest);

a pattern image storing unit (column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest) for storing the pattern image (figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) obtained by said pattern image obtaining unit (column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest);

a detecting unit (column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest, where this unit will detect defect by computing of the imaged area for inspection, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) for detecting the presence or absence of a defect (figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of a part to be inspected by making a comparison (column 5 lines 1-20 discloses the detection of defects are compared with master/reference patterns) between the pattern image of a reference part (column 5 lines 1-20 discloses master/reference patterns) in the

observation object (figure 3 part 31 is seen the objection of observation) stored in the pattern image storing unit (column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest, where this unit will store the pattern image data that is taken) and the pattern image (figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected in the observation object (figure 3 part 31 is seen the objection of observation);

wherein said pattern image obtaining unit (column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest) is arranged to obtain the pattern image of the reference part (column 5 lines 1-20 discloses master/reference patterns) in the observation object (figure 3 part 31 is seen the objection of observation) determined as normal beforehand by performing the focusing control via the focusing control unit using a first focusing control parameter set by the parameter setting unit, and arranged to change the observation position (figure 3 part 32 discloses the position axis of imaging of the object of interest for imaging) to the part to be inspected and obtain the pattern image (column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest) of the part to be inspected by performing

the focusing control via the focusing control unit using a second focusing control parameter set by the parameter setting unit, and

wherein said focusing control unit is arranged to determine the second focusing control parameter, used when obtaining the pattern image (column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest) of the part to be inspected (figure 1 disclose the areas of the object to be inspected, figure 2 discloses the parts that are examples of defects), based on sample information (column 5 lines 1-20 discloses master/reference patterns) obtained when performing the focusing control to obtain the pattern image of the reference part (column 5 lines 1-20 discloses master/reference patterns).

West et al does not teach regarding:

objective lens;

direction perpendicular to an optical axis of the objective lens;

objective lens in a direction of the optical axisof the objective lens;

a focusing control unit () for performing automatic focusing by driving said focusing unit to focus on the observation object;

a parameter setting unit for setting a focusing control parameter used for controlling the automatic focusing;

performing the focusing control via the focusing control unit using a first focusing control parameter set by the parameter setting unit;

performing the focusing control via the focusing control unit using a second focusing control parameter set by the parameter setting unit; and

focusing control unit is arranged to determine the second focusing control parameter.

However, Xu et al teaches regarding

objective lens (figure 1 part 155 is seen as objective lens);

direction perpendicular (figure 1 discloses where the part 155 is right on top of the stage) to an optical axis (figure 1) of the objective lens (figure 1 part 155 is seen as objective lens);

objective lens (figure 1 part 155 is seen as objective lens) in a direction of the optical axis (figure 1) of the objective lens (figure 1 part 155 is seen as objective lens);

a focusing control unit (column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) for performing automatic focusing (column 2 lines 60-68 discloses automatic) by driving (column 5 lines 30-40 dsicloses stepper motor for driving of the focusing) said focusing unit (column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) to focus on the observation object;

a parameter setting unit (column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) for setting a focusing control parameter (column 3

lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) used for controlling the automatic focusing (column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing, column 2 lines 60-68 discloses automatic);

performing the focusing control (column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) via the focusing control unit (column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) using a first focusing control parameter (column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) set by the parameter setting unit (column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing);

performing the focusing control (column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) via the focusing control unit (column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) using a second focusing control parameter (column 3 lines 1-10 discloses second

focusing control parameter such as diameter and illumination intensity set to a know value, where the first is the stepper motor) set by the parameter setting unit (column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing); and

focusing control unit (column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) is arranged to determine the second focusing control parameter (column 3 lines 1-10 discloses second focusing control parameter such as diameter and illumination intensity set to a know value, where the first is the stepper motor).

It would have been obvious to one skill in the art at the time of the invention to employ Xu et al teachings to West el at regarding the subject matter above.

The motivation to combine such that the abilities to adjust will optimize image resolution for different type of targets (column 2 lines 60-67), automated review stations reduce labor costs and provide improved consistency and accuracy over human operators (column 2 lines 5-10, column 2 lines 57-58), thus, therefore further improve defect detection and characterization for many type of targets (column 5 lines 34-38).

(2) Regarding claims 2 and 10:

West et al and Xu et al further teach:

if the focusing control (Xu et al, column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) using the second focusing control parameter (Xu et al, column 3 lines 1-10 discloses second focusing control parameter such as diameter and illumination intensity set to a know value, where the first is the stepper motor) is unsuccessfully performed when said pattern image obtaining unit (West et al, figure 3 part 33 disclose the unit that will obtain the image of the object of detection) obtains the pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected), the focusing control parameter (West et al, column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control, column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) is changed to the first focusing control parameter (West et al, column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control, column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) and the pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern

image having different kind of defects) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected) is obtained by performing the focusing control (Xu et al, column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) using the first focusing control parameter (West et al, column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control, column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing).

(3) Regarding claims 3 and 11:

West et al and Xu et al further teach:

wherein if the focusing control (Xu et al, column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control) using the first focusing control parameter (West et al, column 5 lines 30-40 discloses where the stepper motor that will affect the aperture for focusing control, column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) is unsuccessfully performed when said pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) obtaining unit (West et al, column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the

object of interest) obtains the pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected), the pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected) is obtained by regarding the focusing position (West et al, column 4 lines 25-35 discloses where the changing of spacing for focusing and image taking) of the reference part (column 5 lines 1-20 discloses master/reference patterns) as the focusing position (West et al, column 4 lines 25-35 discloses where the changing of spacing for focusing and image taking) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected).

(4) Regarding claims 4 and 12:

West et al and Xu et al further teach:

wherein when said pattern image obtaining unit (West et al, figure 3 part 33 disclose the unit that will obtain the image of the object of detection) obtains the pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are

inspected) by regarding the focusing position (West et al, column 4 lines 25-35 discloses where the changing of spacing for focusing and image taking) of the reference part (West et al, column 5 lines 1-20 discloses the detection of defects are compared with master/reference patterns) as the focusing position (West et al, column 4 lines 25-35 discloses where the changing of spacing for focusing and image taking) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected), information (West et al, column 4 lines 20-65 disclose information and setting that from the user and system) about unsuccessful focusing control (West et al, column 4 lines 20-65 discloses the controls and code reference of defects carried out by hardware of the system) is added to the pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected).

(5) Regarding claim 7:

West et al and Xu et al further teach:

wherein the sample information (Xu et al, column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) comprises at least one of information (West et al, column 4 lines 20-65 disclose information and setting that from the user and system) about the focusing position (West et

al, column 4 lines 25-35 discloses where the changing of spacing for focusing and image taking) of the reference part (West et al, column 5 lines 1-20 discloses the detection of defects are compared with master/reference patterns) and information (West et al, column 4 lines 20-65 disclose information and setting that from the user and system) about a light amount according to light reflected (Xu et al, column 3 lines 1-10 discloses second focusing control parameter such as diameter and illumination intensity set to a know value, where the first is the stepper motor) from the reference part (West et al, column 5 lines 1-20 discloses the detection of defects are compared with master/reference patterns).

(6) Regarding claims 19 and 23:

West et al and Xu et al further teach:

the focusing control parameter (Xu et al, column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing) contains at least one of movement speed (West et al, column 4 lines 45-55 discloses stepping motor operate by 100um) of said focusing unit (West et al, column 4 lines 20-60 discloses a camera 33 comprising a optical focusing system which enables adjacent points of moving for focusing) search range (West et al, figure 2 disclose the ranges of defects) used when acquiring the observation object (West et al, figure 3 part 31 is seen the objection of observation) auto focus method offset amount (West et al, column 4 lines

45-55 discloses stepping motor operate by 100um, where these distance are the offset), and contrast threshold (West et al, column 1 lines 20-40 discloses predetermined threshold values).

(7) Regarding claims 20 and 24:

West et al and Xu et al further teach:

said pattern image obtaining unit (West et al, figure 3 part 33 disclose the unit that will obtain the image of the object of detection) obtains a plurality of inspection images (figure 2 discloses the plurality of images up for inspected and inspecting) of the reference part (West et al, column 5 lines 1-20 discloses the detection of defects are compared with master/reference patterns) by operating said observation part (West et al, figure 3 part 31 is seen the objection of observation, figure 1 disclose example of the area/part under observation of interest) changing unit (West et al, figure 3 discloses where the stage is movable for changing of the position 32 for the imaging) after obtaining a reference image (West et al, column 5 lines 1-20 discloses master/reference patterns) of the reference part (West et al, column 5 lines 1-20 discloses master/reference patterns) and detects defects (West et al, figure 2 discloses the detected defects, column 5 lines 1-20 discloses master/reference patterns where it is comparing with the taken object of interest for analysis) by comparing (West et al, figure 2 discloses the detected defects) the plurality of inspected images (West et al, figure 2 discloses the plurality of images up for inspected and inspecting) with one reference image (West et al,

column 5 lines 1-20 discloses master/reference patterns) in the detection unit (West et al, column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest, where this unit will detect defect by computing of the imaged area for inspection, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects), respectively.

(8) Regarding claims 21 and 25:

West et al and Xu et al further teach:

the reference part (West et al, column 5 lines 1-20 discloses master/reference patterns) and the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected) are provided in a specific position (West et al, figure 1 and 2 disclose the area/position of interest for analysis) in the observation object (West et al, figure 3 part 31 is seen the objection of observation, figure 1 disclose example of the area/part under observation of interest) having a plurality of same patterns (West et al, figure 2 discloses the plurality of images up for inspected and inspecting) and the patterns of the reference part (West et al, column 5 lines 1-20 discloses master/reference patterns) and the inspection part (West et al, figure 1-2 disclose samples of parts/area that are inspected) are the same, respectively.

(9) Regarding claims 22 and 26:

West et al and Xu et al further teach:

the presence or absence of a defect (West et al, figure 2 discloses the plurality of images up for inspected and inspecting for defect) detected by making a comparison (West et al, figure 2 discloses the detected defects, column 5 lines 1-20 discloses master/reference patterns where it is comparing with the taken object of interest for analysis) between the pattern image of the reference part (West et al, figure 2 discloses the detected defects, column 5 lines 1-20 discloses master/reference patterns where it is comparing with the taken object of interest for analysis) stored in said pattern image storing unit (West et al, column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest) and the pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected (West et al, figure 1 disclose the areas of the object to be inspected, figure 2 discloses the parts that are examples of defects) by said detecting unit (West et al, column 4 lines 40-50 discloses where the unit 36 will digitization, storage, computation and control of the imaging of the object of interest, where this unit will detect defect by computing of the imaged area for inspection, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects), and if a different part (West et al, figure 1 where the image is grid and different parts of the object of inspection is process) is found in each pattern, the

pattern image (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects) of the part to be inspected (West et al, figure 1-2 disclose samples of parts/area that are inspected b) is determined to be abnormal (West et al, figure 1-2 disclose samples of parts/area that are inspected for defects/abnormal) and if the patterns are the same (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects)), they are determined to be normal (West et al, figure 1 discloses a sample of the pattern image that is take for analysis, figure 2 disclose where the pattern image having different kind of defects and not normal from the master/reference image during comparison).

(10) Regarding claim 9:

West et al teaches the following:

driving a stage (figure 3, column 4 lines 23-40 disclose a movable platform that the object of interest is place on, column 4 lines 45-50 disclose a stepping motor that operate to advance the table by 100um) or an objective lens **facing** to an observation object in order to change an observation part of the observation object placed on the stage (figure 3, column 4 lines 23-40 disclose a movable platform that the object of interest is place on) to a reference part determined to be normal beforehand within the observation object (column 5 lines 1-15 disclose that the master pattern data of parts are collected to be good quality,

column 6 lines 7-11 disclose that the master pattern having establish reference values of track area and that other patterns will be grade according within those set reference values);

obtaining a pattern image of the reference part (column 5 lines 1-15 disclose that the master pattern data of parts are collected to be good quality, column 6 lines 7-11 disclose that the master pattern having establish reference values of track area and that other patterns will be grade according within those set reference values);

driving the stage or the objective lens in order to change the observation part of the observation object to a part to be inspected, which becomes a target of inspecting **for the presence or absence** of a defect within the observation body (column 1 lines 1-5, column 1 lines 22-40, column 2 lines 16-35 disclose detecting of abnormal condition of the object of interest from the surface);

obtaining a pattern image of the part to be inspected (column 4 lines 22-67 disclose the apparatus on how the pattern is obtain, column 5 lines 1-10 disclose how the master pattern is obtain, column 6 lines 7-15 disclose that the establish reference values are obtain and apply); and

detecting **the presence or absence** of an abnormal condition of the part (column 1 lines 1-5, column 1 lines 22-40, column 2 lines 16-35 disclose detecting of abnormal condition of the object of interest from the surface) to be inspected by making a comparison between the pattern image (column 1 lines 10-15 disclose comparison between a taken image

and a master image to detect abnormalities, column 5 lines 1-10 disclose comparing defect with master image pattern in area and perimeter, column 6 lines 7-10 disclose the master image with reference values of track area and perimeters length for the master pattern) of the reference part and the pattern image of the part to be inspected (column 1 lines 10-15 disclose comparison between a taken image and a master image to detect abnormalities, column 5 lines 1-10 disclose comparing defect with master image pattern in area and perimeter, column 6 lines 7-10 disclose the master image with reference values of track area and perimeters length for the master pattern).

West et al does not teach regarding the following:

performing focusing control so that **automatic** focusing is achieved on the reference part according to a first focusing control parameter, determining a second focusing control parameter based on sample information obtained by the focusing control and performing the focusing control in order to achieve focus on the part to be inspected according to the second focusing control parameter.

However, Xu et al teaches the following:

performing focusing control so that focusing is achieved on the reference part according to a first focusing control parameter (figure 1 disclose the stepper motor 115 connected to the computer 105 which seen a the focusing controlling unit, column 4 lines 20-30, column 6 lines

10-22 disclose computer 105 that will select an appropriate aperture setting);

determining a second focusing control parameter based on sample information obtained **when performing** by the focusing control (column 3 lines 21-32 disclose adjusting of the intensity of the light source up and down this is seen as the second focusing control parameter) **to achieve the focusing on the reference part (**column 4 lines 30-40 discloses stepper motor of changing aperture, column 5 lines 1-10 discloses where the aperture is used for focusing**)**;

performing the focusing control in order to achieve focus on the part to be inspected according to the second focusing control parameter (figure 1 disclose the stepper motor 115 connected to the computer 105 which seen a the focusing controlling unit, column 4 lines 20-30, column 6 lines 10-22 disclose computer 105 that will select an appropriate aperture setting, column 3 lines 21-32 disclose adjusting of the intensity of the light source up and down will make further parameter for comparison of the taken pattern to the reference pattern);

setting the focusing parameter (column 3 lines 1-10 discloses calibration samples of a particular target type and visually analyzes the sample for defect to obtain calibration data, these samples will set the parameter setting for focusing**) to the second focusing parameter (**column 3 lines 1-10 discloses second focusing control parameter such as

diameter and illumination intensity set to a know value, where the first is the stepper motor);

It would have been obvious to one skill in the art at the time of the invention to employ Xu et al teachings to West el at regarding performing focusing control so that focusing is achieved on the reference part according to a first focusing control parameter, determining a second focusing control parameter based on sample information obtained by the focusing control and performing the focusing control in order to achieve focus on the part to be inspected according to the second focusing control parameter. The motivation to combine such that the abilities to adjust will optimize image resolution for different type of targets (column 2 lines 60-67), automated review stations reduce labor costs and provide improved consistency and accuracy over human operators (column 2 lines 5-10, column 2 lines 57-58), thus, therefore further improve defect detection and characterization for many type of targets (column 5 lines 34-38).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Werson (US Patent Number 4,51,807) disclose an optical inspection system.

Wihl et al (US Patent Number 4,532,650) disclose photomask inspection apparatus and method using corner comparator defect detection algorithm.

Mita et al (US Patent Number 4,547,895) disclose pattern inspection system.

Takagl et al (US Patent Number 5,801,965) disclose method and system for manufacturing semiconductor devices, and method and system for inspecting semiconductor devices.

Mizuno (US Patent Number 6,047,083) disclose method of and apparatus for patter inspection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsung-Yin Tsai whose telephone number is

(571) 270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tsung-Yin Tsai
November 20, 2007

JINGGE WU
SUPERVISORY PATENT EXAMINER